The Technology Review

VOL. XIII FEBRUARY, 1911 NO. 2

HEARING BEFORE JOINT COMMITTEE ON EDUCATION

Legislative Committee hears arguments in favor of grant of $100,000 a year from the State—An unusually interesting hearing

The first important event in the campaign for a grant of $100,000 a year from the state was the hearing before the joint Committee on Education of the Massachusetts Legislature, which was held at the State House, February 7th. Although this hearing occurred on the day of the heavy snow storm the largest room available was filled, mostly with Tech men. The hearing was unusually interesting. It was full of variety and arguments were presented from every standpoint. The principal address was made by President Maclaurin, who was followed by President A. Lawrence Lowell of Harvard University, a member of the Technology Corporation; Mayor John F. Fitzgerald, William H. O'Brien, president of the Central Labor Union; Frederick P. Fish and President Frederick W. Hamilton of Tufts College, two members of the State Board of Education; Walter C. Fish, manager of the General Electric Works; Commissioner of Public Works Louis K. Rourke of Boston, formerly engineer of the Panama Canal; Harvey S. Chase, an expert accountant; Whitfield Tuck of Winchester. President Hamilton was the only one in opposition to the bill, and even he urged his point largely in order to have full consideration of all such grants on a broader basis.

Dr. Maclaurin presented an able plea much of which is covered by the argument prepared by him and printed in the January REVIEW In speaking of the increased expenses he referred to the pressure of competition from western institutions richly endowed by state grant.

"In the early days the Institute was almost alone in its chosen field. Now most of the great State universities have vigorous departments of technical education; and the millions that are poured in annually to some of these universities inevitably increase the price that must be paid for professors of the front rank. When you appreciate these facts you will not be surprised by an increase of nearly $73,000 per annum in our salary list; and if you investigate the facts, you will be convinced that we cannot possibly be charged with extravagance. The Carnegie Foundation has recently issued a bulletin setting forth the cost of the training in a single department in a number of the leading educational institutions of

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America. An examination of that report will show that Technology is managed most economically. As an indication of the relative expenditure, take these three figures from the bulletin: Columbia, 75; Princeton, 68; Technology, 46.

"I hope you will understand that when we get this $100,000 per annum we will not be in clover. We will have just enough to keep things at their present level, and with the inevitable rise in cost, we shall have to press immediately for support from other quarters than the State.

"Our buildings are now not only scattered, but they are absolutely crowded out. To meet the changed conditions and to maintain the highest standards of efficiency we simply must move. This will involve buying a new site and rebuilding on a larger scale at the cost of millions. Now not only do we expect but we are absolutely assured of generous support from our alumni in carrying out this policy of expansion. However, although there is scarcely any limit to their generosity, there is a limit to their means."

Senator Brown: You say that you are now spending some $30,000 out of your reserve fund. I presume that you could not keep that up indefinitely.

President Maclaurin: We would have to drop some of our departments or reduce the salaries of our teachers and instructors.

Representative Bellamy: Would you be willing to allow the State Board of Education to have more to say about the conduct of the institution if this grant was allowed?

President Maclaurin: I should not object to the State Board being authorized to visit the Institute and report on its workings. There should be some measure of State control wherever public money is expended.

During the questioning Dr. Maclaurin said that while the question of a new site had not been fully decided it is hoped that it soon will be decided. While discussing the State grants and State scholarships, Dr. Maclaurin said that the Institute gives away every year in scholarships, more than the equivalent of the State's $25,000.

Frederick P. Fish, member of the Executive Committee, said that he had served on that committee for several years and that every year his respect for the Institute has increased. Mr. Fish reviewed in brief outline the history of educational institutions receiving aid from the states. He showed that the colleges of the West, in order to catch up with the older institutions of the Atlantic seaboard, had been aided most liberally. Technology started practically a new departure in education —technical education—about fifty years ago and, said Mr. Fish, "the success which it has attained in so short a time is remarkable.

"I should like to prophesy," said Mr. Fish, "that we are now only at the beginning of this great industrial development and that never will the need for schools such as the Massachusetts Institute of Technology be so great as in the coming years. Chemistry will develop even more wonderfully than has electricity in recent years."

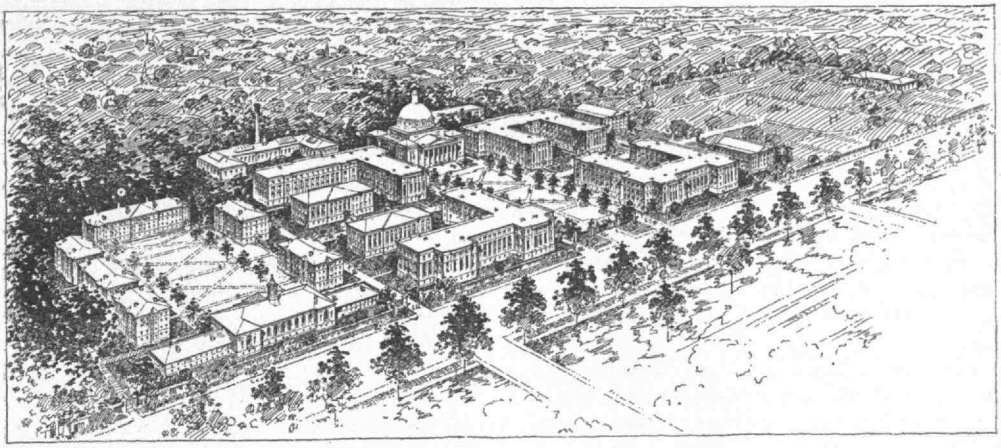
Mr. Fish said that he had been impressed greatly by the economies which Tech has to practise; that these economies are cropping out constantly in every department and often serve to handicap the best men.

Representative Bellamy—As a member of the Massachusetts State Board of Education, do you come here, Mr. Fish, to advocate granting Tech $100,000 when it may serve to cripple other State institutions?

Mr. Fish—I am under some embarrassment in appearing here as a member of the State Board and as a member of the M. I. T. Corporation, but I feel that the $100,000 cannot be spent to better advantage than in helping M. I. T. Of course we cannot spend the $100,000 twice, and we have to consider whether we can spend it to better advantage than by giving it to Tech.

Senator Brown—As a member of the State Board of Education you favor increasing this grant?

Mr. Fish—Yes; I cannot separate my belief as a private citizen from my belief as a member of the State Board.



One of the proposed arrangements for New Technology Buildings

President Lowell of Harvard, who is a member of the Technology Corporation, said that in general he was not in favor of institutions not directly controlled by the State being given State aid. But in the case of M. I. T. he felt that it practically was a State institution to some extent. In a way the State is bound to see that Tech is helped until it gets on its feet, so to speak. Tech has grown faster than anyone could have foreseen. Dr. Lowell said that the time soon should come when Tech should get along without State aid. That the institution is efficient there can be no doubt; that there is need for such an institution there can be no doubt. It not only is educating its students, but it is doing much for the community.

"The only question here," said Dr. Lowell, "is whether you deem the Institute a sufficiently worthy institution to depart from the established custom of not aiding schools and colleges for the higher education."

Representative Armstrong—What do you propose to do with your present property?

Dr. Lowell—We propose to sell that property but on a part of it there are restrictions.

Mayor Fitzgerald said that Boston would have to pay 35 per cent of this proposed grant. He had considered it carefully and supported it unreservedly. The State pays one half the expense of industrial schools established by the cities and, while these schools fit for business rather than for Tech, yet they really establish a precedent for this increased grant.

Technology, said the mayor, is a great benefit to Boston. After speaking of Commissioner of Public Works Rourke and saying that he was working on his first big snowstorm, the mayor said that the method of handling this problem was one of the many things which showed the value of having a scientific man like Mr. Rourke, a Tech graduate, in city service. There is a vast field here for scientific men to save money for every municipality.

Frederick P. Stearns, former chief engineer of the Metropolitan Water Works and also of the State Board of Health, emphasized the growing importance of engineering. The growth in the numbers of engineers has been 150 per cent within the past decade.

Mr. Rourke said that he came as a product of the Institute. "I came when the tuition was $200 and I had to hustle for it," said he. "I hustled and it did me good."

"If the grant can be given to the Institute," said Superintendent Rourke, "it will come back to the State a hundred fold. Massachusetts can not let the Institute go backwards."

Whitefield Tuck of Winchester said that for once he was present not to oppose but to favor "a cause so great and good." Later in his address Mr. Tuck showed that his change of feeling was only temporary by saying that he expected "to oppose about everything else that is to come up and would add to the State's expenditures." This remark met with laughter.

Harvey S. Chase, the expert accountant, gave figures to show how badly off the institution would be without State aid.

Walter C. Fish, manager of the General Electric Works at Lynn, which employs about 11,000 men, said that that business, a strictly technical one, had grown up through the development of technical training. No one, he said, could point to any manufacturing business which would not fail within a few years if it had no benefits from technical training. The graduates of Tech have played an important part in Massachusetts. A perusal of the catalogue will show this conclusively.

William H. O'Brien, president of the Boston Central Labor Union, had just arisen to speak when Senator Brown asked: "Do you appear today as Mr. Hostile O'Brien or Mr. Harmony O'Brien?"

After laughter had subsided, Mr. O'Brien said: "I appear now as 'Mr. Harmony O'Brien,' but I wish always to be understood as opposing unwarranted expenditure of State money. In this instance, however, I am for this grant and I believe that in this attitude I am supported by the laboring people and others.

President Frederick W. Hamilton of Tufts College was the only one who stood up when those opposed to the bill were called and after nearly everyone else present had arisen to show their favor. He said that he did not desire to oppose what had been so well said by previous speakers, but desired that the committee should consider that there are other colleges and schools; that while Tech is a fine technical school, it is not the only one in the State. The time has come when a policy for the State's relations with colleges and the higher schools should be considered. That question—much broader than that a of grant for Tech—is embodied in a resolve now pending. He favored subsidizing the student rather than the college, and said that he could not see how the plan for Tech would aid the students.

If the bill is reported favorably by the Committee on Education it is likely that there will be a joint hearing before the Committee on Ways and Means—we hope before the month is over. It is impossible to say when the Legislature will vote on the matter but from the universally appreciative attitude of the members of that body we have a strong hope that the vote will be taken before April 1 and that it will be favorable.

The Offer of the Springfield Alumni

With the exception of the campaign for state aid the most interesting development of the year was the offer of the alumni of Springfield and vicinity of a site for the Institute of Technology When it became rumored that the Institute might be obliged to move from greater Boston the alumni of the Connecticut Valley, after putting in about a week of solid work secured options on thirty acres of land very close to the city of Springfield. A delegation was sent to Boston to offer this land to President Maclaurin with the assurance that if he would give Springfield consideration a very large sum of money would be raised there for the purpose of securing the Institute. The committee stated that the Chamber of Commerce and the Board of Trade, as well as other civic, business and social interests of the city, would start a campaign at once if there was a possibility of accomplishing the desired result. Dr. Maclaurin assured the delegation that the matter would receive serious consideration by the Executive Committee of the Corporation.

Although the Springfield men realized that it would be a very difficult thing to

get the Institute to move away from Boston, and although Technology is first, last and all the time with the Connecticut Valley alumni, wherever it may finally locate, they are fully persuaded that if the Institute should move to Springfield it would soon create an atmosphere of its own in the sympathetic surroundings of that city and it would further be the most important educational institution of its kind in western Massachusetts.

The REVIEW has received the following letter from the Springfield alumni committee having this matter in charge:—

SPRINGFIELD MASS., February 6, 1911.

EDITOR TECHNOLOGY REVIEW:—

Actuated by the same feeling which is in the heart and mind of nine thousand other Alumni of Tech scattered all over the earth, the feeling of loyalty to the Institute and a desire to see it able to establish such a policy as will allow it to multiply a hundredfold its sphere of usefulness and to develop an even stronger individuality than it has been able to do in the past—actuated by this feeling the Alumni Association of Connecticut Valley offers to the Institute a site in Springfield.

It is generally agreed that the present site in Boston is a handicap and we believe that with Boston's inevitable growth in the near future, this handicap will apply to a site in Greater Boston.

There are sites and sites.

Located in Springfield, the development of Greater Technology would be more efficient and more rapid than in any other part of the Commonwealth and its individuality and prestige would be tremendously enhanced. In Springfield, in twenty years, Technology would dominate the city and we would be proud of the fact. As to the Springfield site, the officials of the Institute who have inspected it have expressed themselves to the effect that it was ideal and was ample for many years to come.

In addition to this site, which the Technology Club of the Connecticut Valley will give to the Institute, the land immediately surrounding it is of such a nature and in such an undeveloped state that two hundred acres more could be easily obtained surrounding the tract which is offered. We believe this location would focus the attention of all its Alumni to a greater degree than a relocation in Greater Boston. For fifty years, Boston has derived enormous revenues from the students and faculty of the Institute of Technology.

What has it given in return?

There may be reasons why the Institute should remain in Boston. There are many more reasons why it should remove from Boston. The present valuation of real property is already so high within ten miles of the State House that a suitable site sufficiently large for future development would require an enormous expenditure which might better be used for greater equipment, more buildings or higher salaries.

Within a ten mile radius of the site offered is a population of 250,000 and the great majority of this population is engaged in industries which call for highest technical skill for their successful operation. Within five miles of the site is the largest development water power east of the Mississippi River save that at Niagara. Adjacent to and within a half mile of the site are sixteen manufacturing plants of international importance; within a two mile radius is greater diversity of manufacturing and industrial plants than can be found in any city of this country within this radius. Within the ten mile radius are six highly diversified manufacturing centers.

Loyalty to the Alma Mater is a distinctive characteristic of the Anglo Saxon and this loyalty is most pronounced where the individuality of the University dominates its surroundings. An institution such as Tech should be located in the heart of a region where industrial and scientific pursuits dominate rather than in a community given over to distinctly academic or agricultural interests and in a place where the least expenditure of money will give the most efficient education,—where the undergraduate may feel that he is getting this education at the lowest fixed cost; where the governing body may know that these conditions are fulfilled.

We most earnestly ask all Tech Alumni to consider this matter carefully. This offer is intended to give the Institute a chance to come into its own and is inspired only by loyalty to Technology. Whatever may be the final decision of the Corporation, and wherever they may decide to locate, the Alumni of the Connecticut Valley will do everything in their power to help carry out the Tech policy.

FRANK H. PAGE '85.
E. E. LOCHRIDGE '05.
G. C. GARDNER '87.

A Splendid Tribute to Newell

After Congress had authoirized the bond issue of $20,000,000 for the work of reclamation of arid lands in the West, President Taft appointed a board of army engineers to make an investigation into the Reclamation Service and advise him as to this expenditure. The *Outlook* says it is a splendid tribute to the unremitting and unselfish work of the director of the Reclamation Service, Mr. F. H. Newell, '85, that this board made no recommendations differing essentially from the plans and policy which he has pursued.

Duquesne Follower of Despradelle

It is of interest that Professor Duquesne, who is coming to Harvard University to give instruction in architectural design, should have received his training at the Beaux Arts in Paris in the same atelier as Professor Despradelle, who has done so much for the architectural education of this country during the seventeen years that he has been teaching at the Institute of Technology.

In 1897, Duquesne won the Grand Prix de Rome and while pursuing his studies at the Villa Medici was always noted for the splendid character of his work. He is the first man who won this coveted honor in competition on a plan that was unsymmetrical and free, and which disregarded the generally accepted traditions of the profession. Many of his studies made in the atelier have been considered so excellent that they have received the serious attention of his successors ten or fifteen years later. As a draughtsman he is unexcelled and his work has always been distinguished for its restrained character. Among some of his Boston pupils are Guy Lowell, Allen H. Cox, F. L. W. Richardson and Philip Wadsworth.

Duquesne as a younger student did much work under the guidance of Despradelle, who was his "ancien" in the atelier, and it is noteworthy that Harvard, in selecting the best teacher to be found in France, should have chosen a man who will continue the traditions in teaching, which, under Professor Despradelle at Tech, have long made Boston a most important center of architectural education in this country. —*Boston Herald.*

Professor Jackson retained by the British Government

Professor Jackson, head of the department of electrical engineering at the Institute, has been retained by the British government to advise the Postmaster General in regard to the value of the great telephone property which the government is to purchase this year from the operating companies and make a part of the national post office organization. Professor Jackson has been expert adviser of the Massachusetts Highway Commission in telephone matters and is president of the American Institute of Electrical Engineers. He went to England on a preliminary consultation, but returned to America on February 7th. This commission from the British government is a striking tribute to America, the Institute of Technology, and Professor Jackson. It has provoked some comment on the other side of the water, but the selection was made after the mature deliberation which the magnitude of the work in hand demanded. The report will involve over 1,500 exchanges and more than half a million subscribers. The capital of the companies is $60,000,000.

Research in Electrical Engineering

Various lines of research are being carried on in the department, mostly under the direction of Professors Pender and Wickenden. Some of these relate to the effects of heat treatment on the magnetic qualities of silicon iron, certain transient phenomena that may occur in long electric circuits, the effect of high frequencies on the permeability of iron, the effective resistance and reactance of steel rails when conveying alternating currents, the selective action of spark-gap lightning arresters with respect to frequency, the reflection of light from walls and ceilings, the disruptive strength of rubber-insulated coatings on wires, etc. Certain of these are continuations of work started last year, and researches in each will be carried on as may be convenient and needful to get knowledge of the phenomena under investigation.

Herbert W. Jaques, '77, was elected president of the Massachusetts Golf Association, January 20th.

CARNEGIE RECOGNIZES DR. HALE'S WORK

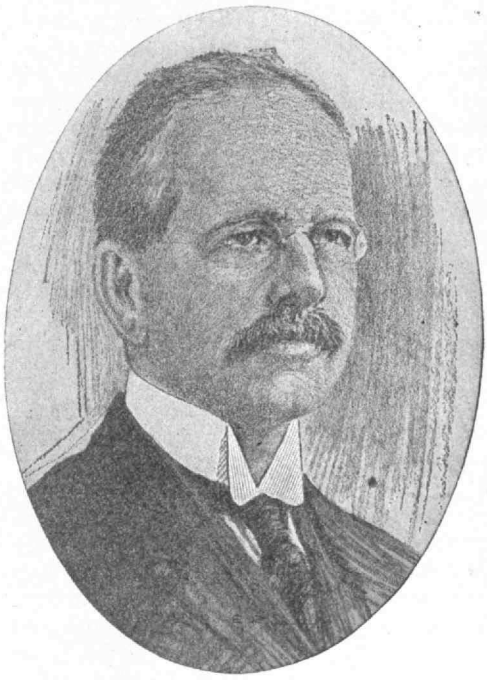
An additional grant of $10,000,000 for research largely inspired by the wonderful results of the Mt. Wilson Solar Observatory at Pasadena, California.

Announcement was made last month that Andrew Carnegie had given an additional $10,000,000 to the endowment fund of the Carnegie Institution for research in Washington. One of the principal fields of its research is astronomy, the work being directed by George E. Hale, '90, director of the Mount Wilson Solar Observatory, at Pasadena, Cal. In a newspaper interview, Mr. Carnegie said that he visited the observatory a year ago, and discovered a genius in Professor Hale, who adopted entirely new processes in astro-physics. One of his photographic plates taken just before Mr. Carnegie arrived, revealed 16,000 new stars, and another plate made since that time, brought to light 60,000 more, some of them ten times larger than our sun, which had never before been seen by man.

Dr. Hale, director of the observatory, is now in Rome, having gone abroad some months ago for his health. Professor Walter S. Adams, assistant director, gave out a statement covering the discoveries announced by Dr. Hale during the last year, and giving an outline of what Mr. Carnegie may expect in the way of verification of his preduction that startling astronomical discoveries are at hand.

These discoveries, the scientists believe, will come in rapid sequence when the 100-inch lens for the new 230-foot telescope is brought here from France and installed. Among the prospective discoveries or demonstrations, the one probably of greatest interest to laymen is the effect of sun spots on the atmosphere enveloping this planet. The deductions of Dr. Hale and his assistants may revolutionize present theories of meteorology and make weather predictions an exact science.

"When Mr. Carnegie was here at the observatory, a year ago," said Professor Adams, "he declared that Professor Hale was the greatest astronomer in the world today. Dr. Hale made one of the most wonderful discoveries of the age a short time before Mr. Carnegie's visit, when he determined definitely that sun spots were



George E. Hale, '90

great electrical vortices moving across the sun like terrestrial cyclones. We are now working on the probable effect of these sun spots on the earth and stars. We have already discovered that the spots do affect both earth and stars magnetically, and have something to do with magnetic storms on the earth. This is an old theory, but never before was

it definitely determined. We were able to do it by means of our sixty-foot tower telescope.

"Our new 150-foot tower telescope will be completed in a few months. The telescope will be 150 feet long and the spectroscopical instruments will be placed eighty feet below that, making the entire telescope 230 feet long. There is nothing like this anywhere in the world, and it will magnify the image of the sun many times more than the present telescope, and we hope to make many new discoveries and deductions.

"We have been using our great sixty-inch reflecting mirror telescope for two years, with which we have made many excellent photographs of the sky, revealing thousands of objects and stars never before seen. Many of these objects are too small to be seen with other instruments, or if they are seen the image is too small to study the structure. Most of our work is studying the spectra of the stars and adding our results to those accomplished by other observatories in working out various problems. Our new 100-inch reflecting telescope, which we hope to have done in another year, as soon as a perfect lens can be cast in France, will add greatly to the work."

Mr. Towne Provides for Young Men

Even among his classmates, few were aware of the benefactions of Linwood O. Towne, '78, to deserving young men who were struggling for an education. In his will, which was recently probated in Salem, a provision is made for continuance of this assistance to men studying at educational institutions with courses uncompleted until they shall be graduated, or decide to leave to take some employment. These men will not be asked for payments on loans advanced where such payments would handicap the men too soon after getting employment. It also provided that the beneficiaries will not be pressed for payment of notes if not convenient. until five years after they have been graduated.

Death of L. P. Kinnicutt, '75

After an illness of some months Leonard P. Kinnicutt, '75, director of the department of chemistry, Worcester Polytechnic Institute, Worcester, Mass., passed away on February 6th. In his death the alumni body has suffered a great loss and the State and the Nation a tireless and resourceful worker in the field of sanitary chemistry. Professor Sedgwick, who was one of his close friends, contributed the following appreciation of Professor Kinnicutt's work to the *Boston Transcript:*

"Science, education and the State have each and all suffered a heavy loss in the death of Professor Leonard Parker Kinnicutt, head of the department of chemistry in the Worcester Polytechnic Institute. The passing of a prominent politician or of a millionaire often excites more comment than does the death of a quiet yet accomplished worker in the fields of science and education, and it seems to me therefore fitting that the citizens of Massachusetts should pause for a moment to recognize and mourn the loss of one who has done high and helpful service in the fields of science and scholarship.

"Professor Kinnicutt's specialty was sanitary chemistry, a subject somewhat encroached upon but by no means eclipsed by the modern development of sanitary biology and in the subject to which he had chiefly devoted his life, Dr. Kinnicutt had made himself a leader of the very first importance.

"Born in Worcester in 1854 he was graduated from the course in chemistry at the Massachusetts Institute of Technology in 1875. The next four years he spent in professional studies in Germany and during this period had the first warning of the insidious disease from which he has finally died. The writer made his acquaintance at the Johns Hopkins University in '79, where the young Kinnicutt was a pupil of Remsen. Proceeding to Harvard, the difficult degree of doctor of science was won in 1882 and here also Dr. Kinnicutt served as instructor in chemistry until made assistant professor at the Worcester

Polytechnic Institute. Since 1888 he had been director of the large and important department of chemistry in the Worcester institution, where he had long been a favorite and beloved teacher whose pupils are scattered all over the country in positions requiring responsibility as well as technical skill.

"Professor Kinnicutt's principal work has been done in and for the State of Massachusetts. In 1883, for example, he was admitted to membership in the American Academy of Arts and Sciences, which carries upon its rolls the leading scientific men of Massachusetts, and from 1902 to the present time he has served as chairman of one of its most important committees. He has had much to do with the New England Water Works Association, the Boston Society of Civil Engineers and the New England section of the American Chemical Society, of which section he has taken his turn as president. His name, however, is almost as well known throughout the whole United States as it is in Massachusetts, as is shown by the fact that he has been since 1903 consulting chemist to the State Sewerage Commission of Connecticut; has served as vice president of the American Association for the Advancement of Science, and as associate editor of the *Journal for Industrial and Engineering Chemistry*. Moreover, unlike many excellent American scientific men, Professor Kinnicutt had an excellent international reputation with membership in the London Chemical Society and in the Chemical Society of Germany, and honorary membership in the Society of Managers of Sewage Disposal Works in England. He was an authority on the disposal of wastes; on the sanitation of air, water and gas; on methods of chemical analysis, and on many other branches of the huge and important subject of chemistry which he had made so much his own. His latest work, prepared in conjunction with Winslow of the Institute of Technology and Pratt of the State Board of Health of Ohio, is the latest and by far the best treatise on the subject of sewage disposal in the English language, and one which bids fair to remain a lasting monument. Shortly before his death he was chosen president of the Section of Hygiene and Sanitation of the International Congress of Applied Chemistry.

"I can hardly trust myself to speak of Professor Kinnicutt's personality. This was unique, lovable, and altogether charming. Kindness and friendship such as his life exemplified could not further go. He was critical, yet just; fearless, yet considerate of others; honest to a fault; a hard worker; and to a degree nowadays unusual, an accomplished and cultivated gentleman."

The Spirit of Technology

The following is an extract of a letter from a graduate of a few years ago, who, in a measure, worked his way through the Institute:

"I beg to bother you once more to request that, if you know of the date the Committee on Ways and Means will report their findings to the Legislature, to kindly inform me. I would be very glad to go to Boston a few days previous and confer with the representatives from my home district, as well as to other members, in order that I may relate to them personally the kindness, the generosity and the spirit of helpfulness prevailing throughout the Institute, from the students to its President, towards the men that go there with limited means."

Technology Club founded in Worcester

On January 31 the Worcester Alumni held a meeting in co-operation with the Committee on State Aid which was so successful that it was decided to form a local alumni association there.

Spaulding Bartlett, '89, was elected president and H. M. Latham, '93, was made secretary. The executive committee, which consists of the president, secretary, F. E. Davis, '83, A. S. Heywood, '92, and L. E. Vaughan, '02, will decide on a name and draft the by-laws.

Copley-Plaza Hotel, to be built on the site of the Old Art Museum

Passing of the Old Art Museum

The old Art Museum on Copley Square is being torn down to make room for the new Copley-Plaza Hotel which is to be erected there. It is expected that the new hotel will be completed before January 1st, 1913. The plans call for what will be one of the most notable hotels in the country. One of the features is an immense ball room suite with a private entrance from the street. The ball room will have a stage and back of the stage will be a large serving room connected by elevator with the kitchen, in the basement. Over 600 people can be comfortably entertained in this room at banquets.

Fiftieth Anniversary Plans

Plans for the Congress of Technology that will convene in Boston April 10 and 11, to commemorate the fiftieth anniversary of the granting of the charter to the Institute, are progressing most satisfactorily.

The committee now contemplates placing much emphasis on the social side of the convocation and indeed, if certain matters take a fortunate trend and the Legislature passes favorably on our appeal for an increased state grant, it is likely that the affair will take on the semblance of a love-feast.

It is expected that local alumni associations will all hold meetings on the memorial date. The committee will suggest a program for these meetings and in the event of any important announcements local associations will be notified by telegraph.

Illuminating Engineering

The subject of illumination and photometry has been added to the subjects taught in the electrical engineering department. This is treated from the standpoint of what is generally called illuminating engineering and is made an optional study. The instruction is by lectures, recitations and laboratory work under the direction of Professor Wickenden.

Why $100,000 from the State

BECAUSE the Institute asks for no more than is absolutely necessary to maintain its efficiency; a smaller grant would leave it either to fall short in efficiency, or to sacrifice its principal to immediate necessities.

Since 1894 the number of our students has increased from 1,200 to 1,600, the annual cost of instruction in excess of receipts from tuition fees from $66,000 to $210,000, although the tuition fee has been advanced from $200 to $250.

BECAUSE one hundred thousand dollars is no more than Massachusetts can afford. The valuation of the state in 1905 was nearly $5,000,000,000; the value of its manufactures nearly $1,200,000,000. An appropriation of $100,000 is but $20 on each million of the state's wealth. An increase of even 1% in the value of manufactures, by reason of increased efficiency in technical education, would amount to $12,000,000. Merely as an investment, over and above the advantage to its reputation and its young men, the state cannot afford to grant less.

BECAUSE the *economic return to the state* is manifold. The prosperity of the state depends directly on abundant employment, and a wide range of opportunity for its citizens. The technically trained man not only has assured employment for himself, but he makes possible—as an engineer, an employer, or an inventor—the employment of many others. If higher technical education is restricted by cost, or inferior in quality, the young men who would otherwise obtain it are left to fill up the lower ranks, the industrial army becomes inefficient or helpless for lack of leadership.

The industries of Massachusetts are subjected to increasingly severe competition. They can only maintain themselves by keeping their methods and processes at a high level of scientific efficiency by employing the best trained chemists and engineers. Unless efficiency and economy are thus secured, there will be an increasing tendency to transfer industries to other states, where raw materials and fuel are cheaper, and labor laws less strict—with grave results for Massachusetts and her working people.

Associate Membership in the Alumni Association

Any former student of the Institute making application for associate membership to the secretary of the Alumni Association, and passed upon favorably by the Executive Committee, can become an associate member on the payment of the regular dues of $2.00 per year, which includes subscription to the nine issues of TECHNOLOGY REVIEW.

The growing strength of the alumni, not only in Boston, but all over the country, has made the local club meetings of unusual interest, and former students not now members of the association should take the opportunity to become identified with it. Application blanks may be had of Walter Humphreys, secretary, 491 Boylston St., Boston, Mass.

$1,000 to Mrs. Richards for Research

A complimentary luncheon was given to Mrs. Ellen H. Richards, '73, by the M. I. T. Women's Association, on January 7th, in commemoration of the conferring of the honorary degree of Doctor of Science upon her by Smith College, last October. There were about 100 members present. During the luncheon, a purse of $1,000 was presented to Mrs. Richards to be used for carrying on her research work at the Institute. The officers elected at the business meeting following the luncheon were as follows:—Mrs. Ellen H. Richards, '73, permanent president; Margaret E. Dodd, '92, first vice-president; Laura B. Plummer, '96, second vice-president; Mildred E. Blodgett, '07, correspondent secretary; Elizabeth B. Babcock, '09, recording secretary; Annie E. Allen, '97, treasurer; C. Belle Kenney, '86, Grace A. Norris, '87, Dora Williams, '96, executive committee.

"EFFICIENCY" KEY-NOTE OF ALUMNI BANQUET

One of the most profitable meetings in the history of the Association—Site will be secured this year—Major Briggs presented with a watch

The annual banquet of the Alumni Association which was held in the large banquet hall of the Somerset, January 4th, was full of genuine enthusiasm and was one of the most profitable meetings that the Association has had for many years. There were about 400 present and although the program was long, nearly every man remained until shortly before midmight when the last speaker had finished. A. Farwell Bemis, '93, the retiring president, proved himself to be a most resourceful toast-master, and his unexpected sallies livened up the program which was in its general nature, a serious one.

During the course of the dinner, John L. Bachelder, '90, from his place on the floor asked for attention and in a very happy speech, presented Major F. H. Briggs, formerly chairman of the committee on athletics, with a handsome gold stop watch, in recognition of the signal service he has rendered in the establishment and development of Institute athletics.

Jasper Whiting, '89, the first speaker, described the work of the committee on state aid. He outlined the reasons for asking the state for a grant of $100,000 a year, and appealed to his hearers to use every legitimate means to show the members of the legislature, the justice of our request. In closing, Mr. Whiting said, "The keynote of the discussion tonight is efficiency. The Institute of Technology stands for nothing if not for efficiency. Let your work with the legislators as sons of Technology, be efficient, for only by being efficient will it bring results. Gentlemen, your Alma Mater calls upon you tonight to render her a great service. In so doing you will at the same time render an equal service to the great state of Massachusetts."

The topic selected for the evening was "Efficiency," and the speakers who had been invited to address the association were President Maclaurin on "Educational Efficiency;" George W. Perkins on New York on "Efficiency in Organization and Administration;" Frederick W. Taylor, of Philadelphia, on "Industrial Efficiency," and Louis K. Rourke, '95, street commissioner of Boston, on "Efficiency in the Administration of Public Works."

Dr. Maclaurin arose amid a storm of applause and created considerable more when he stated that this would be the last time that the President would mention the site question as a problem at an annual alumni dimner. Dr. Maclaurin's address is given in full elsewhere in the REVIEW.

Mr. Perkins, who has just left J. P. Morgan & Company to follow a special line of work along the lines of coöperation between capital and labor, made a plea for industrial harmony and for the kind of coöperation that makes for efficiency and stability. He declared that coöperation must take the place of competition and if it is to be real and profitable, there must be a studied and harmonious correlation between manager and stockholder, between manager and laborer, between manager and the public and between manager and the government. Mr. Perkins' speech, which is published in full elsewhere, is well worth reading because it represents the deliberate conclusions of a man whose experience in industrial organization and management has, perhaps, been as great as that of any other.

Mr. Taylor told his audience what scientific management was not, and then he instanced some of the results of scientific management in various lines of business. "Scientific management," said Mr. Taylor, "is one of the roads that

leads to the solution of the problem of the working man that confronts us today."

"Scientific management had its beginning about thirty years ago, and the development has been very gradual. and it was not until about five years ago that any very serious thought was given to the new science. In no single instance has theory preceded practice. Practice brought forth reasons in every instance. At the present time there are about 50,000 men in this country working under the scientific management system, and these men are far more prosperous than other workers at the same lines of work, and at the same time the employers are more prosperous. Scientific management is applicable to every kind of individual or comprehensive industrial effort. Its large range of application embraces most every great and small unit of construction and of industrial processes. Giving the workingman a higher class of work, and at the same time making him the friend of his employer, is perhaps the greatest good of this new system. There is no exception to this rule. During the last thirty years there has never been a strike in a factory where scientific management had been in force. Making the laborer and the employer the best of friends is the one great aim of this system and this aim had been accomplished in every instance.

"The essence of the new system lies in four great burdens that the managers take upon their shoulders, namely—1, development of science in place of the rule-of-thumb methods, by making every act of the workman a scientific study and reducing all the knowledge to laws and formulæ; 2, the scientific selection of the workingmen themselves, and the teaching of them to do the work that they are best fitted for by nature; 3, the bringing of science and the scientifically trained workman together to work for the common good; 4, the assumption on the part of the managers of the enormously great duties that were formerly laid on the employee, putting more men on the side of the managers, and dividing the duties equally between the two sides.

"Thus, after a scientific study of bricklaying, the motions of the bricklayer could be reduced from 8 to 3, making it possible for the average layer to set about 350 bricks per hour under the new system against 120 under the old.

"Teaching the workman the science of his trade does not destroy initiative, but, on the other hand, gives the young man entering the trade a chance to get a training that brings more dollars to himself and to his employer."

When Mr. Rourke was called upon, the hands of the clock were approaching twelve, but the frankness of his address, his homely and apt illustrations, and the common sense that stamped his conclusions, held his audience until he had finished speaking. His subject was "Efficiency in the Administration of Public Works." "There is no doubt in my mind," he said, "that the majority of results being secured in municipal, State and National work are inefficient. The ordinary citizen in talking on the subject, nine times out of ten, will say that this inefficiency is due to graft, so-called. For the past five years I have been directly connected with public work involving millions of dollars, and can say that in all this work there was no sign whatever of graft. The chief waste due to political management is the entire change in the heads of departments and the change in the personnel of the employees with a change in administration."

Mr. Rourke was followed by Dr. Noyes the newly elected president of the, association who made a few brief remarks in acknowledging the honor conferred upon him. Both the new president and the retiring president were given a hearty round of cheers.

While the dinner was in progress, a telegram of greeting was read from the Northwestern Association. During the evening, Mr. Bemis was presented with a bouquet of roses by his classmates. Mr. Bemis acknowledged this token of regard, and, amid rousing cheers, presented the bouquet to Mrs. William Barton Rogers, who was a guest at the head table.

CONNECTICUT VALLEY MEN DINE

Springfield Alumni and Officials extend a Cordial Welcome to the President, and show the advantages of that city as a site for Technology

The activity of the members of the Technology Club of the Connecticut Valley in securing a site for the Institute in Springfield, Mass., has stirred up alumni feeling there to the highest pitch, and when President Maclaurin and the other Boston guests arrived in Springfield for the annual dinner on the evening of January 28, they found an enthusiastic crowd of nearly fifty men, all of them anxious to impress the President with the advantages of Springfield as a location for the Institute, provided it seems best to move that institution outside of greater Boston.

The dinner was held at the Hotel Worthy, and although the hospitality there is always of the best, the proprietor Frank L. Worthy, '86, outdid himself to show what real Connecticut valley hospitality means. Besides Doctor Maclaurin, the invited guests were J. W. Rollins, '78, chairman of the committee on state aid, Frank H. Rand, bursar, and I. W. Litchfield, '85, from Boston; Representative A. T. Langtry, editor of the *Springfield Union;* Charles W. Bosworth; Waldo Cook, representing the *Springfield Republican*, and C. P. Chase, president of the Board of Trade. Eben Stevens, '68, president of the club, was unable to be present because of his mother's death. No meeting is ever complete without Mr. Stevens, who is close to the hearts of all those who know him, and although the meeting was one of the most successful the club has ever had, there was an element lacking which only his presence could give. The dinner was of the fraternal kind and somewhat resembled the old game of "stage coach," nearly every man shifting his place between courses, and when there was any opportunity for it, Gleason, '03, led in a ringing song.

It was at a late hour when Mr. N. P. Ames Carter, '86, called the meeting to order, and Frank Page, '85, was asked to make a report for the delegates that went to Boston to offer the Springfield site to the President. Mr. Page's report fairly represented the spirit of the Springfield men who arranged this whole matter so effectively. His attitude, like that of the other speakers, was an absolutely unselfish one, showing that the dominating influence was Technology first, last and all the time, but if there was any possibility of moving from greater Boston they proposed to make the welcome to Springfield a most substantial one. George C. Gardner, '87, another member of the delegation, followed Mr. Page and told of some of the advantages of Springfield as a site for the Institute.

Doctor Maclaurin received a handsome ovation when he rose to speak. Referring to the offer the alumni of Springfield had made, Doctor Maclaurin said that he appreciated the warm greeting and that it assured him that whatever might be the future action of the officials of the Institute of Technology, Springfield believed that nothing was too good for the institution.

He spoke of the fact that many students come to Tech from all parts of the country, and that its founder came from the South. It has many students from the West and the middle West. It has among the choicest of its constituents the solidity and substantiability of New England. There are students from all over the world, and it is sometimes wondered why they come to this school when their own sections have such fine educational institutions. "It is because the technical education cannot be duplicated and because it leads all technical institutions in the country," said President Maclaurin.

He then took up the serious problem

of the Institute's finances. He said that it is no light thing that is asked of the Legislature to give the institute $100,000 a year, and it can only be defended by giving such reasons as can be given. "It must be remembered that Massachusetts has no great natural resources. It can keep in the front rank only by the intelligence of its people. That which cultivates this intelligence is a rich asset. He had heard on the train on the way to Springfield, a story that illustrated the Tech spirit and the skill of one of its graduates. A poor boy had worked his way through the Institute, and, after graduation, a large corporation offered him a position as general manager at a salary of $25,000 a year. He refused it, stating that he wanted a salary of $40,000 a year. The officers of the corporation demurred, but he replied that if they would hire him for this sum, at the end of the year, if he had not saved the company $100,000 a year, he would resign. At the end of the year the directors found that this Tech graduate had saved the company the sum of $750,000, and he still holds the position.

Criticism has been made by some of the request of the Institute for $100,000 a year from the Legislature for ten years, on the ground that it is too large. Some criticise on the ground that it is too small. President Maclaurin said that he could show conclusively that this amount is the minimum that is required. The Institute now exceeds its income by $30,000 a year. This does not mean that it is in debt, because it does not owe a dollar, but it has to draw on its assets for this amount.

"The state provides $25,000 a year that is about to end. The alumni fund of $40,000 a year also is about to end. It is certain that in providing for the future cost of running the institution it must obtain $100,000 from some source. The fees that the students pay only cover half of the expense. Tech is competing with the commercial world, and this a college does not have to do. It has to keep pace with the times, and large business concerns are all the time trying to tempt its professors away from it. Recently a professor in one of the department, who was receiving $2,000 a year, received from a business firm an offer of $10,000 a year, and he naturally accepted it. It has been necessary in the past five years to increase the salaries of the faculty by $75,000.

"By the progress of the times, the institution has been forced to adopt a new policy. In a few years it must get out of its present location in order to develop, and the officials have been very loath to make the move. It has been decided to do so, however, and this will be done in the present year. This means that the cost to the institution will amount to millions. When this move comes, the offer of Springfield will be considered most seriously, and if it is necessary to move from Boston, it will be the offer to be most favorably considered.

"The millions that Tech needs must come from its friends. It is not to be understood that the Institute is an extraordinary straits. At no time has its prestige been so great. At no time has it had so large assets. Graduates from Tech are welcomed in every industry, and in pure science.

"The offer that Springfield has made to the institution has awakened the alumni all over the country, and offers have come in from Cambridge, Worcester, Chicago and other places. If Boston does not want the school, others do. Springfield by its offer has done an immense service to the Institute and its future promise was never brighter."

Charles W. Bosworth paid a glowing tribute to his home city and its advantages, and said: "We don't want Massachusetts Institute of Technology here if it is not for the good of the Institute to make such a move, but at all events it is worthy of your most serious thought and careful consideration. We all have an understanding of the broad principles of business and commercialism that is produced by the M. I. T. spirit. It is a school of which we are all as proud, as we are proud of the spirit it fosters."

James W. Rollins of the contracting firm of Holbrook, Cabot & Rollins of Boston, a member of the Corporation of

the Institute and chairman of the committee on state aid, was the next speaker. He said: "When I feel myself being drawn into the maelstrom of Technology spirit tonight, I cannot help feeling confident that it is the very spirit that will carry the Institute through. It has loyal men carrying it through to success, and we need every one of them. I am a Boston man, I have always lived there. I hope to see Technology always stay there, but if it is going to move anywhere, I want to see it come to Springfield."

Representative A. P. Langtry said: "There is one very serious thought in my mind as to the Massachusetts Institute of Technology coming to Springfield. It is the river-front problem, the most important one by which the city is confronted. Technology can help to solve it. That is one consideration that, apparently, no one has thought of tonight, which will make the students give unanimous vote for bringing the institution to this city. You men who are fighting for it stick, for you are in the right. Springfield is the very center of New England, and much more easily reached than Boston. The diversity of Springfield's industries makes it an ideal place for the institution. Nowhere are the manufactories more diversified or better represented than here. Springfield is a cultured city—a beautiful city. It is a great big park, the most beautiful city in the world. Therefore, it is a splendid place for the Institute to come to. We want a bigger, better, busier Springfield, and we want M. I. T."

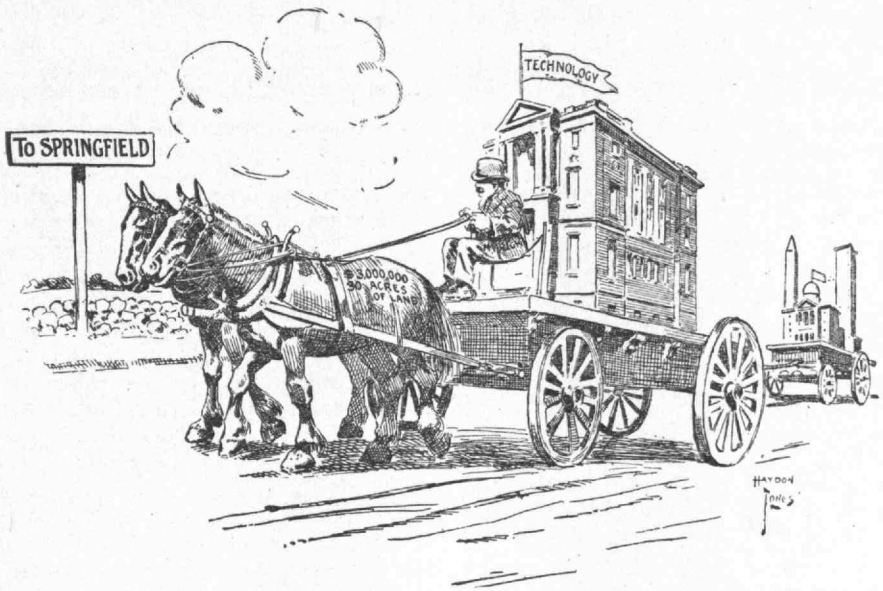
Frank H. Rand, the bursar of the institution, said: "For the past 10 years we, at Boston, have been considering the question of the changed conditions of M. I. T., including the new site. We are overcrowded, almost to the bursting point. I believe almost any change would be an improvement."

The whole attitude of the speakers from Springfield showed a fine spirit of appreciation of the Institute and of its work and a strong desire that it might be induced to locate in that city if it seemed best to the authorities to do so. With their invitation went an assurance that the citizens they represented were only waiting for some encouragement to back up the offer of the site with substantial gifts of money. In fact, Mr. Chase, president of the Board of Trade, said that he thought that Springfield appreciated the work of the Institute sufficiently to give it $50,000 if it decides to build a new institution in Boston.

Location of Site offered by Springfield Alumni indicated by the cross

The last speaker was Clarence Whitney, '91, of Hartford, who backed up the arguments of the Springfield alumni in a very amusing speech and wound up by stating that he had conferred with the mayor of Hartford and was authorized to offer the president a part of $15,000-000 if it would locate in Hartford.

WILL IT COME TO THIS?



Boston Herald

The next morning Doctor Maclaurin and his party were taken out to the proposed site about twelve or fifteen minutes' ride from Springfield by railway or by two lines of trolley cars. The committee found a magnificent location consisting of two hundred acres at an elevation of about one hundred feet and overlooking the Connecticut River with a view of the Berkshire Hills in the distance. The land slopes down to the Connecticut River where could be located boat houses, bathing houses, etc. It is not far from the old Harvard-Yale rowing course. It would take but little work on the part of a landscape gardener to make the place almost a paradise.

It is fair to say that the enthusiasm of the local committee was largely shared by the visitors as they contemplated the possibilities of this splendid location.

More Weeky Luncheons

In the last TECHNOLOGY REVIEW we failed to notice under the title of fixed luncheons the weekly luncheons of the Washington Society which occur at Wallis' Café, 617 12th Street, from twelve to one every Wednesday noon.

The meetings of the '01 to '10 Luncheon Club at the American House Rathskeller, Boston, on Fridays from 12.30 to 1.30, have been growing in size and interest ever since they started. The question of a private room is now being agitated.

In Chicago, the Northwestern Association holds its weekly luncheons at Vogelsang's Restaurant, 178 Madison Street, on Thursdays, at 12.30 p. m., and the Technology Club of Rhode Island at Providence holds its weekly luncheons at Brucker's Hotel, Thursdays, at 1 p. m.

Arnold W. Brunner, '79, of New York City, won the award for the plans of the new State Department building which is to be erected in Washington. Mr. Brunner is architect for the cities of Cleveland, Baltimore, Grand Rapids and Rochester. He is ex-president of the New York Chapter of the American Institute of Architects, and for two years was a member of the Art Commission of New York City.

ENTHUSIASM RIFE IN CHICAGO

Dr. Noyes guest of Northwestern Association at Annual Dinner—Dean Goss, '89, and Prof. Mann, '94, of University of Illinois pay tributes to Alma Mater

The annual dinner of the Northwestern Association was held at Vogelsang's restaurant, Chicago, January 7th, and was full of the old time enthusiasm that has always been a feature of the gatherings of our brethren in the middle west. There were about one hundred men present and Johnie Hand, who, with his orchestra, has become an institution of of the Northwestern Association, waved the baton.

The guests of the evening were Dr. Arthur A. Noyes, '86, the new president of the Alumni Association, Prof. W. F. M. Goss, '89, dean of the College of Engineering, University of Illinois, and Prof. Frederick M. Mann, '94, head of the Department of Architecture, University of Illinois.

The noise committee, which was as effective as usual, and under the leadership of Moore, '01, led in singing a number of parodies from the song-slips with which the guests were provided. The president of the association, Mr. Frederick K. Copeland, '76, introduced the speakers.

Dr. Noyes, who received a rousing welcome, took the men into his confidence and gave a good heart to heart talk. Among other things, he dwelt at some length on the site problem and declared that probably before the end of the year there would be no such thing. He also touched on the disposal of the present property, and his statements carried great satisfaction to his hearers, showing that the new Technology was uppermost in the minds of every man. He pictured the rise of the Alumni Association in power and influence and showed how today it was one of the most effective institutions of its kind in the country; that it was taking direct responsibility in coöperating with the President and the Corporation and that its possibilities of accomplishment were almost un limited. He laid much stress upon the ability of the alumni to assist in a large way in providing new buildings for the Institute and stated that the entire problem depended chiefly upon them. Dr. Noyes was given the assurance of the Northwestern Association that when the time came its members would not be found wanting, either in providing money or in giving effort.

Dr. Noyes also spoke on the application for a state grant of $100,000 annually for ten years, and described the effective work of the alumni committee on state aid. He also called attention to the Congress of Technology which will be held on April 10th and 11th, to celebrate the fiftieth anniversary of the granting of the charter to the Institute. The commemoration of that event will be marked by the presentation of papers by prominent alumni, on the industrial development of the country due to the establishment of schools like the Institute of Technology; the proceedings of the congress to be published in a memorial volume. Dr. Noyes also told about the work of the committee appointed to secure a site for the Summer School of Civil Engineering, adding that the site had practically been purchased and would soon be presented to the Institute by the alumni donors. He stated that never was there a time when the instruction at the Institute has been as efficient as it now is, notwithstanding its hampered condition because of lack of funds. The plan of education is being constantly developed and new methods are being tried as soon as they prove desirable. Student life at the present time is on a most satisfactory and sound basis, in fact probably better than at

most institutions. He paid a tribute to a former President when he said that the efforts of Dr. Pritchett had paved the way to the improved social conditions of the students at the present time.

Dr. Noyes' remarks were most gratifying to all of his hearers and created great enthusiasm.

When the speaker had concluded, E. M. Hagar, '93, rose and stated that the entire association was heartily in favor of the policies outlined by Dr. Noyes and, he added, with becoming modesty, that when the Northwestern Association was in favor of any policy concerned with the Institute, its policies were bound to go. He spoke glowingly on the subject of new site and new buildings and declared that the Universal Portland Cement Company, of which he is president, would offer to the Institute of Technology all of the cement necessary to build the new Institute, and that this donation would come as but one of the many that the Northwestern Association hoped to make. Hagar sat down amid a storm of applause and it was some moments before the men realized what his generous offer meant to the Institute.

The next speaker, Professor Goss, took for his subject "The Spirit of the Tech in the East and in the West." His address was prepared at the request of the Northwestern Association in order that they might know what the University of Illinois was doing and what influence Technology had on the work of the University. Professor Goss spoke in part as follows:

"For nearly fifty years the Institute of Technology has constituted a significant element of leadership in many different directions, promoting efficiency and pointing the way to new undertakings. For half a century, Tech men have been going out to all parts of the country to build railroads, to assist in railway operations, to plan and direct manufacturing establishments, to design the machines or other devices to be manufactured, to modernize the sanitary and engineering aspects of cities, to become members of college faculties and in many ways to have their part in bringing about the present-day success of a very busy people. It has somehow happened that localities into which Tech men have entered have become inoculated with a better appreciation of things scientific and technical. Not only have individual business enterprises been promoted, but a new spirit has arisen in many cases dominating communities of people; a spirit of approval for things which are right. Moreover, localities thus affected have become centers of distribution from which similar influences have been passed on to new localities, until the infection, either primary or secondary, has become wide-spread, and no one can estimate the sum total of the good that has been accomplished thereby. As one having some acquaintance with engineers and with their undertakings, I do not hesitate to venture the opinion that the effect has been far more significant than most Bostonians would claim or imagine.

"Among the undertakings which have especially profited by the work of the Institute, I may properly mention the educational institutions of the middle west. I limit my reference to these because it is with them that I am best acquainted. Many of these institutions have received Tech men as members of their faculties. The number has not been large; it has, in fact, been altogether too small, but the influence exerted has been of a high order. Of still greater importance than the helps rendered by this small group of men, is that which has come to the educational institutions of the West from Tech men in industrial positions. Such men have had their part in creating an intelligent understanding on the part of the public, concerning the purpose and value of engineering education. Their influence has been general in its effect; it has rarely concerned itself with matters of detail. It is this fact, perhaps, that has saved many of the colleges of engineering of the middle West from being merely little 'Techs'—poor imitations of the source of their inspiration. Instead, while endeavoring to adhere to the broad fundamental conceptions which have

controlled in the development of the Institute, they have grown up as indigenous to the soil. Each one has developed its own form of administration and has placed emphasis upon lines of work of its own choosing, the assumption being that in so doing it has best served the need of its students.

"The University of Illinois, for example, has gained very much from the Massachusetts Institute of Technology. Its dean makes personal confession of the fact that in a period of thirty years, during which his field of labor has been in the Mississippi Valley, he has rarely failed to make an annual pilgrimage to the Institute that he might understand something of the progress of its current work.

"When the Institute began in Boston, Illinois was essentially an agricultural state. The people of Illinois at that time thought much of their prairies and little of their shops; but in 1900 there were 19 states in the Union, the combined population of which did not equal that of Illinois. Its beginning was as an agricultural state, and the importance of its agricultural interests have steadily increased; but, notwithstanding this fact, only one-quarter of the people in the state today depend upon agriculture for their support, while one-half of all the people depend for their support upon the manufacturing, mining and transportation interests. Massachusetts used to be third among the states in the value of her manufactured products, but today, Illinois is third and Massachusetts fourth.

"In these facts are to be seen the foundation upon which many people in Illinois base their expectation with reference to the future development of its school of technology, which, under present conditions, is represented by the College of Science and the College of Engineering of the University at Champaign. The process by which this institution has thus far been developed is typical of that which has been followed by most other Western colleges. The work of the campus has been preceded by a development of interest in education on the part of the public. Evidences of the existence of such an interest are not lacking. For example, it is rather usual for the governor of Illinois to devote a considerable portion of his message to a presentation of University affairs. Such matters are recognized as affairs of state. The various scientific and technical departments of the university are regarded as having advisory relations with the departments of state. The State Geological Survey, the State Water Survey, the office of the State Entomologist, as well as the State Agricultural Experiment Station and the State Engineering Experiment Station, are all located on the university campus. The newspapers discuss plans which may be proposed for the extension of work. It is almost true that the days of public indifference to university education are past.

"Difficulties arising from a spirit of rivalry between the older institutions of learning and the state university, have in this state ceased, and each year supplies an increasing number of people who seriously and earnestly desire a university which shall be adequate to the needs of the state and who, as citizens, are willing to pay their share in securing it. The legislature of Illinois has recently adopted the following extraordinary resolutions:

> Therefore be it resolved, by the Senate, the House of Representatives concurring herein, That it is the sense of this General Assembly, that the Board of Trustees of the University of Illinois should adopt such a policy as will in their judgment attract to, and retain in, the service of the University and the State, the best available ability of this and other countries.

"The public patronizes the University with the same ardor that characterizes the support it extends to it. The number of students in the whole organization, including the Colleges of Medicine, Dentistry and Pharmacy in Chicago, exceeds 5,000. In Champaign, the student attendance is in excess of 3,500, of whom 275 are in the Graduate School and 1,300 are in the College of Engineering. The latter college offers nine courses in engineering and two courses in architecture. Its organization also embraces

the Department of Physics, which serves the general interests of the University. It is an interesting fact that the Department of Architecture located in the midst of Illinois prairies has come to be one of the largest departments of its kind in the country, and since its destinies are now presided over by a graduate of Massachusetts Tech (F. M. Mann, class of '94), no one can tell to what dimensions it will grow. There is a conviction on the part of those who are carefully studying the situation that fifteen years hence, say by 1925, the enrollment of students in the College of Engineering alone, will have reached 3,000. Plans for the development of the plant are being based upon this assumption."

Mr. Copeland then introduced Professor Mann, '94, who told the Association about the work of the architectural department of the University of Illinois and emphasized the influence that the Institute has had on the architectural development of the whole country. He said that the architectural graduates of the Institute were the prominent men in their profession in almost every state in the Union, and that the instruction in architecture was largely given by those who had studied at Technology.

John Shortall, '87, next told about the Technology Boat Club which has been financed by the Northwestern Association. Shortall had seen the crew at work during the summer and told about the wonderful success that the club has had, asking the association to pledge its continued support to this activity.

The character of the dinner was somewhat different from those of former years. It had the unusual virtue of being started at seven o'clock as advertised, and was on the order of a German stein dinner. It proved to be both profitable and popular.

On Saturday evening, before the dinner, about twenty members of the association entertained Dr. Noyes and Professor Goss at a luncheon and had an informal talk about Institute matters.

Chicago would Treat Tech Right

President Richard C. Maclaurin, of the Massachusetts Institute of Technology, is looking around for a good site for his famous school, preferably one with light, air and quiet and plenty of local appreciation thrown in.

He has asked the Massachusetts legislature to increase the school's appropriation from $25,00 to $100,000 for the next ten years. Unless that is granted, "Boston Tech," he says, "will have to pull up stakes and move to some place where the cost of living is within its means."

Without consulting with Doctor Gunsaulus of the Armour Institute of Technology nor with the Association of Commerce, we are moved to say that President Maclaurin could do no better than boldly bring the Massachusetts Institute of Technology to Chicago. Let it still bear its honored name, but let it get its roots down into the soil where the soil is rich. We could support a "Boston Tech" with our loose change and we wouldn't, like some cities we know of, have to search all the hinterland round about to find the money. —*Chicago Evening Post.*

Rents Will be Lower on the Cape

The Class of '91 will take a three days' outing in June, celebrating their 20th anniversary. The committee have selected Osterville from the list of places under consideration as offering, on the whole, the best opportunity for a good time. Here they will have a dormitory to themselves, an amusement hall in case of rain and for evenings, the Sepuit golf course, the ocean, a sandy beach, several excellent tennis courts, and a good sized power boat,—the two latter items being through the courtesy of friends. Osterville is some 60 miles from Boston, on the south side of Cape Cod about half way between Buzzards Bay and the elbow.

NEW YORK CLUB MAKES MERRY

Dr. Maclaurin calls attention to recent notable achievements of "Tech" Men—Charles Hayden, '90, and Harold Binney, '88, among the speakers

The annual dinner of the Technology Club of New York which was held at the Hotel Knickerbocker, January 21, was a spirited affair, about 175 men attending.

Allston Sargent, '98, chairman of the dinner committee, received the guests and greeted the new arrivals by introducing each to the "welcome to our city" table, which was laden with *hors d' œuvres* and which was also emblematical of the boroughs of Greater New York (Manhattan, Bronx and Martini). The title of this appetizing symposium was "Fantasie Parisienne." We print this as a matter of news, for as the sign was hung at a little distance above the table, it is hardly likely that any one saw it.

The dinner began promptly at 7.30, and was only declared an unqualified success when the cheers of the various classes entirely drowned the orchestra.

George C. Whipple, '89, acted as toastmaster,and his felicitous introductions of the speakers of the evening proved to be an important feature of the dinner. Harold Binney, '88, president of the club, the first speaker, indulged in some historical reminiscences of the old Technology Club, and stated that the recent news from astronomical centers indicated a disturbance in the celestial group of Technology clubs with accumulating evidence that New York is to be a star of the first magnitude.

Charles Hayden, '90, representing the Technology men of New York and Boston made a ringing address on the value of technical training. His talk was spirited and inspiring throughout, and furnished a striking example of the good results that have come from Course IX.

Francis H. Hutchins, Williams, '00, whose reputation among Technology men in New York as an entertaining speaker was established during the days when a joint club house for the alumni of New England colleges was being contemplated, was next introduced, and he kept his audience in roars of laughter. Alexander R. McKim, '85, the first president of the club, was called upon and made a short address, which was received with enthusiastic applause.

Toastmaster Whipple then introduced Doctor Maclaurin, president of the Institute. Doctor Maclaurin brought encouraging news in regard to the matter of site and of the money needed to build new buildings. He outlined the plans for a Congress of Technology, April 10, which is to commemorate the fiftieth anniversary of the granting of the charter to the Institute.

He referred to the added $10,000,000 gift from Andrew Carnegie to the Carnegie Institution and added: "The donor said truly that all that he had given toward the encouragement of research had been fully justified by the discovery of a single genius and the wonderful work that genius had accomplished in the Carnegie observatory at Mt. Wilson. It should be a source of great pride for Tech men to know that this oracle is a Tech man, Prof. George E. Hale, a graduate of M. I. T. of the class of '90. His epoch-making researches in astronomy and astrophysics have added a new luster to American science.

"There is, I think, an undue amount of pessimism in this country with reference to the scientific achievements of its own men. Too often it is suggested that with all the opportunities that are here presented, with all the magnificent equipment that is placed at the disposal of our men of science, too little work of really first importance is done in this country. I do not share that pessimism, but I do

think that though we produce many front-rank men, we often lack the grace to appreciate their real importance."

It was rumored that Prof. R. H. Richards was attending a banquet at the Plaza Hotel, and Francis C. Green, '95, secretary of the club, chartered a taxicab and kidnapped him without a struggle. He was greeted by the Technology men with hearty cheers, and then in his own charming manner he told of some of the interesting problems which were engaging his attention.

The committee in charge of the dinner consisted of Allston Sargent, '98, F. C. Schmitz, '95, Kaludy Spalding, '89, and F. G. Cox, '03.

Annual Meeting of the Alumni Council

The report of Secretary-Treasurer Humphreys at the annual meeting of the Alumni Council, January 2, showed a tremendous growth in alumni activity during the past few years. It will be interesting to know that the report of the Alumni Association on January 18, 1907, showed that the annual receipts were $2,486.64. Four years from that date the receipts of the association were $18,620.54. The receipts of last year are about $1,500 more than for 1909. The deficit for the year is only $348 as against $1,637.47 a year ago. It is also a matter of satisfaction to record the fact that, for the first time in its history, the TECHNOLOGY REVIEW has a credit balance at the end of the year. The actual amount is only about $100, but the tendency is all in the right direction.

Most of the special alumni committees have done valuable constructive work, not only in alumni affairs but in assisting the Institute. The Committee on the Summer School of Civil Engineering reported material progress in securing a site. This committee, like most of the others, is financing its own projects. The Committee on Fire Protection Engineering recommended that the subject be treated in as much detail as may be found practicable in a series of lectures at the Institute open to all engineering courses, and that it be offered as an option in some of the existing courses, possibly that of chemical engineering as soon as financial conditions will warrant. The committee appointed to consider the eligibility of students of the School of Mechanic Arts, which was connected with the Institute from 1876 to 1888, offered a carefully prepared analysis of the status of the members of the school in their relation to the Alumni Association. They recommended that all graduates of the School of Mechanic Arts be eligible to associate membership.

As this report is of special interest, it will be printed in the March number of the REVIEW. Professor Richards, '68, for the Committee on Permanent Funds and the Rogers Scholarship Fund, showed that the loans to students were being paid back with greater promptness and in consequence the fund available for this purpose was larger than ever before. The Walker Memorial Committee reported that the funds on hand amounted to $131,000.

It was decided that except in particular cases, special committees should be discharged at the end of each fiscal year.

Francis C. Green, '95, was reëlected a member of the Committee on Permanent Funds. Dr. J. Arnold Rockwell, '96, was reëlected on the Advisory Council on Athletics. A. F. Bemis, '93, Theo. W. Rollins, '78, and F. L. Locke, '86, were chosen as new members of the nominating committee.

Communication

BOSTON, MASS., Jan. 25, 1911.

Editor Technology Review:—

The class of 1900 enjoys the presence of triplets among its junior membership: Barbara Blair, William Ezekiel and Laura Elizabeth Wentworth, and I question whether this is a distinction enjoyed by any other class of the Institute. In order that this statement may be confirmed, I should like to issue a challenge in behalf of the class of 1900 to our other fellow-alumni to prove that they can do any better; if not, does it not seem proper that Wentworth's accomplishment should be appreciated in some form or manner by the alumni association? This is more than a confirmation of Bemis', '93, recent "bon mot" that "The recent year has seen something come out of nothing—'00."

N. J. NEALL.

JOLLITY IN NEW BEDFORD

Tech Club has a successful Meeting and gives President Maclaurin a Snow Shovel for Greenbacks

There was a sound of revelry at the New Bedford Country Club on the evening of January 25th,—the occasion of the annual dinner of the Technology Club of New Bedford. Forty stalwart sons of Tech were present, and the guests of the evening were President Maclaurin of the Institute and I. W. Litchfield, '85, of the TECHNOLOGY REVIEW. Secretary Wing arranged many surprises, one of the most agreeable being a good old-fashioned steak-and-onion dinner. When the guests were seated, they found an attractive package at each place. The gifts proved to be various noise-making instruments, and although these were not necessary to make the evening a lively one, they added the last delicate touch to the celebration. Doctor Maclaurin was the guest of the association during the extraordinary blizzard a year ago, when by dint of exertion he and the reception committee reached the club-house for dinner about ten o'clock in the evening. This episode was not forgotten, and during the evening he was presented with a snow-shovel which he received with the remark "that it might be intended either for the shoveling of snow, or the raking in of greenbacks." The menu cards were embellished with photographs of various summer outings of the New Bedford club, principally of George Nye's cottage and Allen's pond. Chase had collected a singing contingent by virtue of *habeas corpus*, which carried out the musical program without interruption, as there are no neighbors near the Country Club. Mr. Litchfield, who came at short notice to fill the place of Professor Richards who was unavoidably absent, spoke of the work of the Committee on State Aid and of the growing activity and importance of the Alumni Association. After Mr. Litchfield, the quartet led in singing some Tech songs, whereat Charles Allen, '85, appeared with a handsome bouquet of vegetables which he presented with "painful pleasure" to Mr. Stetson, the leader.

Stetson, in responding for the quartet declared that they appreciated radishes more than greenbacks declaring "none of us can read a note." President Maclaurin was greeted with a rousing cheer, when he invited his hearers to attend the Congress of Technology on the occasion of the fiftieth anniversary of the granting of the charter to the Institute, and gave some idea of the importance of this gathering. He said that he was surprised to read in one of the Boston papers that Technology was a local institution, and proceeded to show its cosmopolitan character and more than national influence. He reminded his hearers that more than one half of the students come from outside the state, many of them from localities where there are state institutions that offer a technical training with practically no fee to residents of those states. He thought it very significant that many preferred to come to the Institute, pay a large tuition fee and heavy living expenses. It is clear they come because Tech gives the best opportunity for a technical education, and they will continue to come so long as the people of the state assist in maintaining this institution in the very front rank. The President referred to the fact that the state had no peculiar advantages in the way of agriculture, minerals, forests or other natural resources. Its wealth and prosperity can only be kept relatively high by superior intelligence, and to this end it cannot afford to have anything but the best in the field of technical education. Such schools as the Institute are obliged to pay increasingly high salaries, not only because of the rise in the cost of living, but because the richly endowed institutions of the West are calling some

of the members of the staff almost every month and tempting them to leave Boston.

Doctor Maclaurin declared that during the next fifteen years all Tech men are going to have reason to be mighty proud of the fact.

Theodore F. Tillinghast, '70, the oldest graduate, and one of the organizers of the New Bedford Club, spoke briefly regarding the work of Technology and of the enthusiasm of the local club.

Classes from '74 to '14 were represented, especially '74.

The committee in charge of the dinner were George H. Nye, chairman, Chauncy Whiton, '94, Charles R. Allen, '85, James A. Stetson, '99, and Charles F. Wing, Jr., '99.

Perkins and his Mancarrying Kites

S. F. Perkins, '09, made some very remarkable demonstrations of the effectiveness of his man-carrying kites at the Los Angeles aviation meet held last month. Some years ago he conceived of the possibility of building kites that would lift a man high enough to make reconnoissance in time of war, and although somewhat handicapped for means to properly carry on this work, he hit upon a plan of making the research pay for itself. He secured the contract for advertising a number of concerns by means of kites until it is now a business by itself. He has developed his mancarrying kites until he makes ascensions of over 350 feet. At the Los Angeles meet a one-wire aërial with a wireless outfit was carried aloft and proved a successful medium for receiving and sending wireless messages. It was a revelation to the officials to know how easily and quickly an emergency wireless station could be established in time of war.

Perkins' whole aim is to demonstrate the feasibility of his scheme to the War Department and secure its adoption by the government.

His first experience along these lines was received at the Blue Hill Meteorological Observatory, where he worked under Professor Rotch and Mr. Clayton. Later on he was assistant to Capt. Thomas S. Baldwin when the latter sold the United States government its first dirigible balloon. He was aid to Lieut. Gericke of the German balloon, Dusseldorf II, in the 1910 international balloon race,

Perkins, '09, carried by Kites 350 feet in the air

traveling a distance of 1,250 miles in 43 hours, and thus breaking the world's record until it was discovered that Messrs. Holly and Post had traveled some 150 miles further in the same competition. It is understood that arrangements have been made with Mr. Perkins to give exhibitions of his man-carrying kites at the coming coronation of King George of England.

DR. MACLAURIN ON TECHNOLOGY EFFICIENCY

Speech at the Annual Alumni Banquet in Boston—The Site "Problem" a passing issue

We are told that the keynote of our discussion tonight is to be *efficiency*. It is a theme entirely appropriate to the place and to the time. As to place, we represent the Institute of Technology and no single word could better describe what it stands for than this word—efficiency. All the talk we hear today about efficiency, in so far as it is sane, is nothing more than an emphasis of the importance of the scientific method in modern business. Think for a moment of the essentials of that method. Are they not these?—a careful investigation of *facts* (here some of our efficiency engineers go astray), an analysis of the problem that reduces it to its simplest elements, an attack on these elements under the guidance of a few illuminating principles. To produce such a habit of thought and to encourage the application of such a method to *all* practical problems is the great end of all our efforts at Technology. The measure of our success here—and nothing else—is the gauge of our efficiency as an educational machine. A discussion of efficiency, then, is eminently appropriate at such a gathering of Tech men. And if the place be fitting, the time is certainly opportune. In saying this I do not refer to the fact that at this time other people are talking much about efficiency. That might be a good reason for keeping quiet, for as a nation I fear we talk too much. It seems, however, that our discussion of efficiency tonight will form a natural prelude to the great celebration of the 10th and 11th of April next in honor of the fiftieth anniversary of the granting of our charter. It is felt that that is an event of far more than local interest, indeed that it is something of national importance. It is felt that this is so not merely because Tech is far more than a Boston institution—proud as Boston ought to be and is of its prestige; that this is so not merely because the Institute draws men from every state in the Union and from about fifty foreign lands, so that for its size it is perhaps the most cosmopolitan educational institution in the world; not merely for such reasons—but because the spread of the scientific method into the domain of business is a *world* movement that men of light and leading in every quarter of the globe are doing their utmost to advance. The race is for the swift and the battle is for the strong, and more and more in the business of the future will men and nations be strong and swift because of their use of the scientific method. It seems well, then, that we should celebrate the foundation of this Institute—an epoch making event in the history of the country—by getting men of eminence from all parts of the Union to demonstrate some of the great results that have already been achieved and to indicate the greater things that may reasonably be expected in the future when business clasps the hand of science with mutual understanding and respect. Such a celebration of our fiftieth anniversary, marked as it doubtless will be by the loyal and enthusiastic support of the alumni, will make this year a memorable one in our annals.

This, however, is not the only event that should make this year remarkable. For long it has been recognized that the Institute is hampered by its cramped condition, and that as it grows, as inevitably it must, its efficiency may be greatly impaired unless it can expand with reasonable freedom. Hence the problem of a new site has been talked of almost *ad nauseam*. I have little to say about this problem at this juncture except that I have some ground for the hope that as far as your annual banquets are concerned, these are the last words that you will ever hear from a President of the Institute with reference to the site. In

future presidential reports the chapter headed site problem will read—"There is no site problem at this Institute."—Such at least is my expectation.

Of the many other events that may make this year a veritable *annus mirabilis* I have time to mention only one. This is the campaign for increased state aid. It is a campaign that must be primarily one of education, and its success must depend very largely on the efforts of the alumni. Do not take it for granted that other people know all about the Institute and do not be content with mere enthusiastic talk about its merits—helpful as such talk may be. Be posted with *facts*, be ready to give a reason for the faith that is in you, and above all be prepared to answer every objection that can possibly be raised by those who, very properly, keep a watchful eye on the expenditure of public funds. It would be out of place for me to discuss the merits of our case on this occasion, but I feel that I ought not to let this opportunity pass of urging you to take an active interest in its progress. If you want a revelation of efficiency—a practical demonstration which will be far more impressive than any speeches—I advise you to get in touch with the Alumni Committee that has this campaign of education in hand. You will see there what the Tech spirit really means—you cannot but be impressed by the thoroughness of its methods, the tireless energy, the persistent application to the problem in hand, and the splendid self sacrifice and quiet enthusiasm that underlies it all A member of this committee, a busy and successful man of affairs in this city, told me yesterday—only partly in jest—that he was closing his office now. I know you will see that it is not fair to let all the load fall on one or two. Let *all* take a share.

Just one point more—do not give any color to the absurd suggestion that the Institute is in a critical position, in the sense that it is on the verge of collapse. An institution with its history and rendering its services to the community simply can not fall. It is earthquake-proof, and not even Professor Jaggar's prescience can see any signs of a quake that can move it. It has practically all that is vitally important in its favor—exuberant energy, traditions of the best kind, and the self-confidence that comes from *proved* success. Its weakness is on the financial side, but even here it owes no man anything and has millions of assets. The one thing that it needs just now is more capital, just as many a flourishing business does. Its troubles are due to the high cost of living in the domain of education and especially in that of technical education of the highest sort. We hear much in these days of the high cost of living in this country. It has entered into the very marrow of our politics and if indeed it be true that by any political action we can live as well at less cost, then of course let us do so. I would have you observe, however, that it is not seriously suggested that we should overcome our difficulties by reverting to the habits of the poorer parts of Europe and reduce the cost of living by a dietary of macaroni or potatoes only. A starvation policy does not really pay and if it does not pay in the household, it does not pay in the school. And it is peculiarly true that in the field of technical education nothing but the best is good enough for Massachusetts. Here we have no great advantages of climate, or soil, or great forests, or mineral wealth or conditions of labor. We can keep in the front commercially and industrially only by superior intelligence. Our salvation must come through *efficiency* and efficiency through training. Most of that training must be given at the Institute of Technology, and all that the Institute asks is that it be put in a position to go on giving to this state *the best that there is.* The ten thousand Tech men scattered throughout the Union are ten thousand arguments in support of such a policy, and through their loyal and enthusiastic efforts in this campaign of education there should be no thought of anything but *success.*

The Institute has the most effective alumni organization in the world.

FOR INDUSTRIAL HARMONY

George W. Perkins declares that the Keynote is Capital–Labor co-operation in address at Alumni banquet

Efficiency in business, to the average mind, has stood for economy in production, effectiveness in selling, and shrewdness in administration; but with the rapidly changing conditions of our time, efficiency that is real, that is enduring, must hereafter stand for something broader than this. It must stand not only for close business management, the saving of the waste, and a keen insight into business conditions and tendencies throughout the world, but as well for a broad spirit of coöperation, a lively regard for public opinion and, above all, an honest, open and square method of business dealing.

The world has moved very fast in the last quarter of a century. Great discoveries, great inventions, have made possible, have compelled, the adoption of new methods in business, and these have crowded upon one another with such rapidity that it is scarcely a matter of wonder that there has been lacking the amount of thought necessary to properly analyze the causes that have brought about the business conditions existing in our country today.

The changes in business methods in the United States, within the lifetime of nearly every man in this room, have amounted almost to a business revolution. Scarcely any line of business is conducted today, or could be conducted today, along the same lines that it was twenty-five years ago. One would think, from much of the talk indulged in during recent years that the great corporations of today, for example, have been created solely to serve the purposes of a comparatively few men; that they could just as well have been created at any other time in the world's history if the same type of men had ever before, existed. Nothing is more fallacious. Doubtless selfish men have taken improper advantage here and there of the new conditions brought about through the inventions and discoveries of the age, but these men could not have begun to do what they have done had it not been for these same inventions and discoveries,—inventions which, in themselves, have been acclaimed and applauded as great achievements. We could have no large business concerns and we should therefore have none of the troubles that beset us today as the result of these concerns, if, with one sweep of the hand, certain inventions and discoveries of our times could be wiped out of existence and we could be put back into the condition of lack of inter-communication under which business was conducted by our forefathers. It is the ocean greyhound, the 20th Century Limited, the telegraph, the long distance telephone, the wireless, that have brought us where we are. The inventors of these methods of intercommunication are the men who are primarily responsible for our problems of today. One of the first requisites for doing business is the ability to communicate with people. In the olden days of transportation of thought and commodity the merchant could only communicate with a very small number of people; therefore, he could do only a small business and he needed only a small organization and a small capital. Today any man in any line of business can communicate with any number of people he desires. With electricity he can flash his offer to sell around the world. Every man in any given line of business, no matter where he is located, has but to have the desire to offer his wares for sale anywhere and he can do it. Whether or not he can do it successfully, profitably, either to him-

self or the labor he employs, or to the advantage of the community he desires to enter, may be another question, but he can at least attempt it, for inter-communication throughout the civilized world is now complete.

This is a condition, not a theory. What are we going to do about it? What are we going to do with it? It is the problem of the day, and this problem affects one and all,—capital, labor, the public, the government. On its solution depends not only the prosperity of the men and women of today, but those of tomorrow.

At the present moment the executive branch of our government is bending every effort to accomplish the construction of the Panama Canal, and we are filled with pride at the prospect that this new channel of commerce opens up to us. If this canal means anything it means the placing of the United States in the very center of the path of commerce in the future. While the executive branch is engaged in this splendid undertaking we are waiting with bated breath for the supreme court of our country to decide, in effect, whether we shall, as a country, do business on a wholesale or retail plan, and our Congress refuses to put a single ship of commerce on the seas.

We are not agreed, and a house divided against itself is bound to fall. Until we adjust our own differences and decide what are to be our business standards, our business methods, we cannot hope for that efficiency and that material prosperity to which the natural resources of our country entitle us; and it is just as important to our foreign trade relations as it is to our domestic trade relations that we settle with all possible dispatch the question of how the United States is going to do business. We must at least have certainty.

Normal conditions now are vastly different from normal conditions in the past. When a man can sit at his desk in Boston and talk to a man who is at his desk in Chicago, and close a business transaction without either man leaving his chair, each recognizing the other's voice, what matters it that there are three or four states separating their bodies? Their minds have met more quickly than could have been the case had they been in adjoining buildings twenty-five years ago. Electricity has emancipated the mind from the body and given it wings. It is the mind, not the body, that does business. Think of it! By placing a wire to one's ear the mind, through the voice, can fly to a distant city, do business there and return, and immediately go off to another city, do business there and return, and do this as many times in a day as occasion requires.

These marvelous changes apply to all phases of life. The farmer, only a few years ago, was isolated on his farm. He raised his produce and hauled it to the nearest town without knowing, when he left his farm, what he could get for it, being more or less at the mercy of the storekeeper when he reached his market. Now the free rural delivery brings him his daily paper, containing all the market quotations at home and abroad. In place of killing a dozen chickens, taking them to town by team, asking the storekeeper to buy them, and being forced to accept what the storekeeper is willing to give, he stays at home until the storekeeper calls him up by telephone and asks if he will do the storekeeper the favor of selling him a dozen chickens; and the farmer knows what price he is going to get before he kills. Having killed the chickens, he whisks them into town on a trolley car or in an automobile —thus saving, first, a long journey with a team; second, offering his articles around town and taking whatever price for them he can get, and, third, considerable time for work on the farm. How greatly has electricity enhanced the efficiency of the farmer.

What a complete change, what an absolute reversal of the order of things in a handful of years! The attempt by humans to make laws that will nullify conditions that have come about through the conquest of the mysteries of nature will never succeed. One might just as well attempt to legislate against lightning.

If this country does not want business done with the instruments that inventors and discoverers have placed in the hands of business men, then eradicate the causes, not the results. Begin by electrocuting Edison and Marconi; apprehend the Wright brothers and put them behind the bars.

A few years ago, largely owing to new instruments for the conduct of business, a commercial war was raging the like of which was never before known in business affairs. In war it is not the long-range fighting that costs so dearly in human life; it is the struggle in the trenches. When the armies are fighting at long range no one can tell when the battle will be over, nor who will win, nor what the loss of life will be; but as the armies draw closer and closer together, the battle becomes fiercer, the destruction more deadly. When the men finally enter the trenches, the destruction is frightful and the end is near. When business men in New York were competing with business men in Chicago, in the days of the stage-coach, competition between the two cities did not do so much harm; but with the advent of the fast trains, the telegraph and the telephone, they got into each other's trenches, and the competition was indeed deadly. This is what was happening in business in the United States, largely owing to the agencies of steam and electricity, which have annihilated distance and made the world so small.

Some of us, believing that some substitute must be found for the ruthless competition that is so deadly in close-range fighting in business, have been endeavoring to build a bridge from old methods to new, from barbarous competition to humane coöperation. Whether or not we shall succeed and the structure will safely carry, only time can tell. The structure may break, through faulty construction, or because vandals cut some of the strands. In either case many would be precipitated into the raging torrents: but, assuming the continuance in use of the instruments with which business is now being conducted, of one thing we can be certain,—the world must, the world will, get across such a bridge, by peaceable and safe methods maybe, but in any event and at all hazards it will get across. For how can we applaud the constant flooding of the world with inventions and devices for drawing it closer and closer together in business and social relations, and at the same time condemn the movement to get away from ruthless competition and adopt more coöperative methods?

Competition under present methods of life is too destructive to be tolerated. Coöperation must become the order of the day. It is the only method that will provide an efficiency such as will answer future conditions of life and the nation that first recognizes this and works out the problem will be the nation to lead in the future. Many of us,—yes, nearly all of us, who are now in middle life, were brought up to believe the old adage that "competition is the life of trade." Competition in the long ago doubtless did stimulate trade but it was almost always to the serious misfortune of one or more individuals. A highly developed competitive system gave ruinously low prices at one time and unwarrantedly high prices at another time. When the low prices prevailed labor was sorely hurt; when the high prices prevailed the public paid the bills. Competition is much like the robbing of Peter to pay Paul; what one gains the other loses. Insofar as competition represents the survival of the fittest, it very often means the survival of the strongest; in other words, that "Might makes right." In this day of close inter-communication, methods that are harmful and practices that are injurious injure many more people than they did long ago.

This past fall the American Iron and Steel Institute invited representatives of the iron and steel institutes of Europe to come here as its guests. Over twenty-five of such representatives came, and a number of days were spent in conferences in this country. The question of competition versus coöperation throughout the world was dwelt on at great length by representatives from all nations.

Toward the close of the meetings the suggestion was made that an international institute be organized, and as this met with favor another suggestion was made that a seal or emblem of some sort be designed that could be used by the international institute. Several designs were submitted. Finally one was offered that showed in the center of the sketch a number of swords and bayonets thrust into the ground and others being made into ploughshares. At the top were the words "Right is might" and at the bottom was the one word "Coöperation." It was surprising to see how quickly this emblem appealed to every man, no matter from what country; and it was clearly because each man, being a leader in his industry in his own country, had become keenly alive to the fact that by the use of the cable, the telephone and the fast ships, he either had to fight fast and furiously and at great risk all over the world, or he had to do business on a "live and let live" basis. Only a few years ago if these same men had met, it is safe to say that many of them, if asked for a design for a seal for an international steel association, would have said that the wording should be, "Might is right; Competition."

But if we are to have coöperation in place of competition we can only have the sort that is real, that permeates everywhere; coöperation between manager and stockholders, between manager and labor, between manager and public, between manager and government. Cooperation that gives better opportunities to managers to enrich themselves and does nothing more will no longer endure. Coöperation that increases profits to stockholders but does not improve the condition of labor cannot endure. Cooperation that means substantial benefits to stockholders and labor, but ignores the rights of the public, will ultimately fail. This is so because the masses have been taught to think. In our country the state and wealthy individuals have vied with one another in spending money to educate the masses, to teach them to think. Having done this, we must expect to answer the questions that such teachings naturally prompt. You cannot spend a million dollars on the education of one generation without having a million questions raised by the next generation.

As a result of the educational process that has been going on, one of the questions raised by the present generation is "What is the proper division of profits as between capital and labor?" This question is being mistaken in many quarters for a demand for higher wages; but the question can never be answered by a mere increase in wages or even by frequent increases in wages. The increasing intelligence of the people, which the state and men of wealth have brought about through their contributions for educational purposes, has raised the question, not as to the amount a man is paid for his services, but as to whether or not the amount he is paid, be it little or much, is his fair proportion of what is made in the business of which he is a part, We see many instances in life where manual labor is performed by people for small pay, and yet willingly performed because they know that what they are paid is all that the calling can rightfully stand.

When labor is in serious doubt or is practically certain that it is not getting its fair proportion, an increase in wage is too much like a bribe and, in many cases simply arouses suspicion and thus adds fuel to the flame. If we are going to get away from ruinous competition to a coöperative or "live and let live" basis, we must coöperate all along the line, and to coöperate between capital and labor there must be a show-down as to what the business is doing; there must be publicity and frankness, to the end that the labor part of the concern may know what the capital is doing and making; and my expericence has been that this, in place of being a dangerous policy for a concern to adopt, is the only safe policy, and that, once adopted, adopted honestly and sincerely, it goes far toward adjusting many differences that have arisen.

The day of the secretive method, of getting away with improper profits, is

gone; but this does not mean that the day of substantial profit to capital is gone. Broadly speaking, I have come to believe that the following principle should be adopted in the organization of American business concerns, viz.: The organization of men managing any given business, including all workers, should be paid their salaries and wages for rendering service of a kind that would earn the amount of money necessary to keep the business rehabilitated, to pay interest on any bonded debt there might be, and dividends on preferred shares of stock, when conservatively issued. If this organization of men, brain workers and hand workers together, should develop so high a type of efficiency that their efforts produce more profits for the concern than is necessary for these purposes, such profits would naturally go to the common stockholders; and at this point the organization of men who carry on the business should share with the common stockholders this extra profit earned; and the basis of this sharing should be with regard to the original cash value of the common stock when the company was organized, the nature of the service performed, the difficulties involved in the business venture, length of service, etc. Broadly speaking, this basis of profit sharing would have enormous advantages all around. The very fact that the organization was employed under such a contract by the stockholders would furnish to the bondholders of such a company the strongest possible probability of receiving the interest regularly on their bonds, since the organization would constantly have as its goal the object of earning something on the common stock, and this in itself would make it quite certain that the interest on the bonds would be earned, if such a thing were at all possible.

Men worthy to be called men, in whatever calling they may be, do not want something for nothing. The gratuity at the end of the year, the Christmas present, when it comes more or less unexpectedly and as a gift, does not give real satisfaction to the mind of the worker. He is apt to feel that it is but a small fraction of what is justly due him, and so it serves the opposite purpose of that intended,— it embitters his feeling instead of strengthening his loyalty. Besides, money received in this way is too often spent for some transient pleasure; it is seldom saved. A definite statement at the beginning of a year to a body of men engaged in any given business, as to what is expected of them during that year, coupled with the promise that if certain results are accomplished each man will have a share in that accomplishment in proportion, as nearly as possible, to what he has contributed, sets a goal that can be intelligently striven for. If success attends such coöperative effort and profits are earned, the men understand how they were earned and they rejoice, not only in the larger income they receive, but as well in having achieved success. And where is the man, whatever his sphere of life, who does not enjoy the tingle that comes with success?

So far as possible, the extra compensation earned under these conditions should not be distributed in cash, but in stock, or, if the business be a small one, in a certificate of interest of some kind that keeps the man's profits invested in the business in which he is engaged. This accomplishes two very important things: First, it gives the man a direct and pecuniary interest in the business and convinces him that he is a partner in fact; and there are a thousand and one ways in which he will become more efficient to the business because of this feeling. Second, it induces him to save, in place of spending this extra compensation on something unnecessary, or of using it to increase the cost of his living, or of putting it into some outside investment that will probably cause him worry and distract his attention from his business. Nothing so tends to increase efficiency in an organization of men as the stimulating of a real, lively interest on the part of each individual in his daily task.

Profit sharing that is real, that is practical, is far from bonus giving. Profit sharing should not only give better and

more equitable compensation but should teach, foster and provide a means for saving. A constantly increasing wage scale means a constantly increasing living scale and a larger purchasing power for commodities, which means higher prices for such commodities. Profit sharing should mean profit saving, and this accomplished would mean many men having many dollars saved and to their credit in place of three or four men in the same business having many dollars to their credit. Accumulated wealth is an absolute necessity for the development and welfare of any nation, but it can be had just as well in groups as in units.

Our large business corporations have been popularly described as trusts, and in one sense of the word the term is more aptly applied to them than many of us have in the past taken thought to realize. They are organizations to which, on the one hand, the public has entrusted its money and to which, on the other hand, labor has entrusted its welfare; and the managers of great corporations, therefore, assume in a very real sense a trusteeship in respect to the public at large,—both the public which invests its money and the public which is employed as labor. It is largely because the managers of corporations have, in many instances, failed to appreciate that they are indeed trustees and have often acted as they would had they been partners in a firm, that we are today confronted with the corporation problem as it is generally viewed, and that some corporations are regarded with ill favor in quarters where they should be regarded with approval.

I believe that of late there has been a development of the business conscience,—a growing appreciation on the part of corporation managers of their trusteeship; and when the giant corporation stands for public coöperation, and each of the elements of which the corporation is made up realizes what it owes as a duty to the others, we shall be far on the road to a solution of our problem. The duty of a corporation to its stockholders is no more sacred than its duty to its employees, and to neither is its duty more sacred than to the public at large. The inevitable conclusion from this view is that corporations should rightfully be subjected to governmental supervision. I, for one, firmly believe in federal regulation and that publicity should be the main stem in the system of governmental supervision. Enforce rigid and thorough publicity and the evils of corporation management will largely disappear; for evils, once fully known, cannot persist in the face of public sentiment. In an address I delivered at Columbia College about three years ago, I dwelt at length on this phase of our corporation problems.

A large percentage of the mistakes of corporate management have occurred because managers have failed to realize that they were not in business as individuals, but were working for other people, whom they were in honor bound to honestly and faithfully serve; and further that they owed a duty to the general public and, in the long run, could best serve themselves and their stockholders by recognizing that duty and respecting it.

It is not sufficient in corporate management to do the best one can from day to day. Corporate responsibility extends beyond today. It is the foresight, the planning ahead, the putting the house in order for the storms of the future, that are the true measure not only of the best and highest stewardship, but as truly of the highest order of managerial ability itself.

We can back and fill, we can talk and scold, we can threaten and abuse and prophesy dire things, yet there will be but one ultimate result, viz., progress and growth. We can delay the onward movement for a time, we can make it very costly, but nevertheless the movement will be onward and coöperation will follow competition just as surely as the electric light followed the tallow candle.

In the very beginning the universe was organized, and all that man has done in society, in the church, and is now trying to do in business, and all that he can do in the centuries to come, can never bring to pass so complete a form of organization, so vast a trust, so centralized a form of control as passes before our eyes each

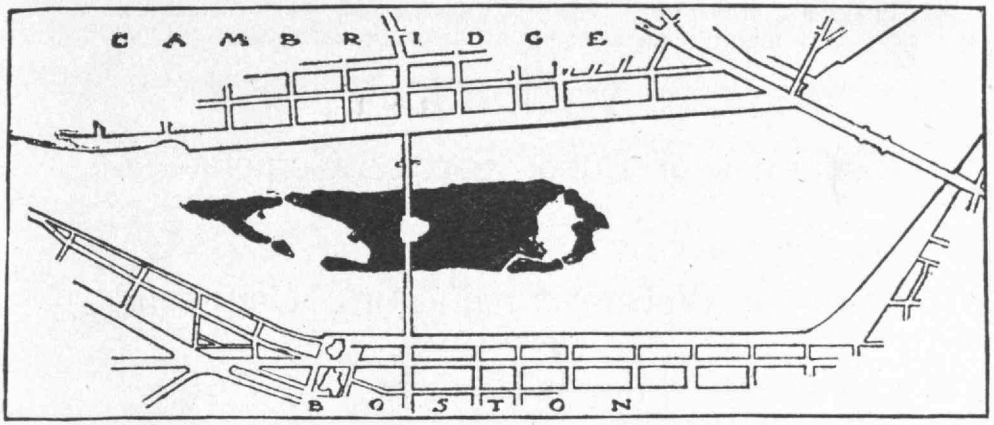
twenty-four hours of our lives as we contemplate that all-including system of organization called the universe. It does not require a very vivid imagination to picture the waste, the destruction, the chaos that would follow if there were not perfect organization, perfect coöperation, perfect regulation, perfect control in the affairs of the universe. How should we get on, for example, if there were incessant competition between day and night, or a constant struggle for supremacy between the seasons? Does any one for a moment think that he would prefer such a condition to the coöperation that now exists through all the affairs of the universe? Organization, coöperation, regulation, control, being the all-permeating principles of the universe, the presumption is in favor of them wherever we find them or the possibility of their coming into play.

The foundations of our nation were laid here in New England,—not by professional politicians but by men of affairs who considered it an honor and a privilege to perform public service. The foundations they laid remain sound and good, but the superstructures, political and industrial, which have been built upon the foundations, like the early railways, have followed the line of least resistance. They answered the convenience and, to a great extent, the needs of a past generation; but they have become unsuited to the changed conditions of today. Evolution and education going hand in hand have wrought the great change. The wastefulness and the glaring abuses of long-accustomed methods in politics and business have become intolerable. Regrading and rebuilding has become a necessity. There must be a straightening of the ways, a releveling of the rough places. The process thus far has been unpleasant, disturbing, costly, perhaps dangerous; but it is not only necessary,—it is inevitable,—a process of life which is bound to push forward. And its result will be good or bad, a bane or a blessing, not altogether according to the guidance and leadership which it receives but mainly according to the character of the life that is in the nation; for in this land of ours the people are the legitimate rulers. Moreover, in every emergency the people make their power felt; they assume responsibilities; they are assuming new responsibilities now; you can feel it in the air; and the result of the reconstruction now beginning will be, not as individuals or classes might wish it to be, but such as will really represent the collective mind of the whole people.

My contact with many different classes of people in many different walks of life has convinced me that there never was a time in the history of our country when the solution of great problems could be so safely left to the people, provided the problems are fairly and fully presented. The danger lies in lack of information, lack of discussion, lack of disinterested leaders who are thoroughly informed and who have the courage of their convictions. Our problems being of the most practical sort cannot be successfully solved by theorists or politicians. What we must now have is constructive work,—work by men who know what the problems are and who are patriotic enough to give their time and their talents to working them out for the best and ultimate good of one and all.

The men in this room are typical representatives of their respective communities. Each one of you owes it to himself, to his kin, to his country, to follow the examples of his forefathers by giving to public questions a certain proportion of his earnest thought and action. At no time since the War of the Rebellion has such service as this been more necessary, and on the quality and quantity of it here, there and everywhere throughout our land will depend beyond question the right solution of our present problem and the future prosperity and happiness of our people.

Springfield's offer to raise three millions if the Massachusetts Institute of Technology can be moved there shows a progressive spirit and enterprise which we question if any other city in the state could equal.—*Malden News.*



Proposed Island for Technology in the Charles River, crossed by Harvard Bridge

To Build an Island in the Charles for Tech

Since the question of a new site has been agitated in the newspapers many interesting suggestions have been made.

One of special importance was from the Board of Metropolitan Improvements that the Institute should be located on an island in the Charles River.

The proposed island scheme has been discussed privately for some months and was favored by some prominent engineers. The Institute would simply have to build retaining walls and the elevated road would dump the material from the new subway there. Dr. Maclaurin thought that the merits of the island scheme should be discussed entirely apart from its connection with the Institute of Technology as there might be very serious opposition to the project. He said that when the citizens determined that an island was desirable it would be time to consider it seriously as a location for the Institute.

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